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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,065	07/25/2001	David Kuo	50103-368	3370
7590 04/21/2004 MCDERMOTT, WILL & EMERY 600 13th Street, N.W. Washington, DC 20005-3096			EXAMINER CHACKO DAVIS, DABORAH	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No.	Applicant(s)	
	09/912,065	KUO ET AL.	
	Examiner	Art Unit	
	Daborah Chacko-Davis	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 15-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-11, and 13-14, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,383,574 (Han et al) in view of U. S. Patent No. 5,232,566 (Edmonson et al) and U. S. Patent No. 6,510,015 (Sacks et al).

Han, in col 1, lines 6-12, in col 3, lines 3-29, in col 4, lines 20-41, in col 8, lines 1-49, in col 12, lines 12-28, discloses that a masked magnetic layer (employed in magnetic storage disks that are concentric) is exposed to ion implantation in the unmasked areas (plurality of sectors that are radially extending) at an implantation energy of about 100 KeV to change the magnetic properties of the magnetic layer selectively (at implanted portions) without changing the uniformity of the magnetic layer followed by magnetization of the magnetic domains in the magnetic layer in a the direction of the field and then switching the field (perpendicularly applied magnetic bias field) to align the domains of the ion-implanted portions and to realign the domains of the non-implanted portions (claims 1, 4, 6, 9, and 14). Han, in col 9, lines 1-30, discloses that the ions were implanted at a dose of about 10^{16} ions/cm² (claim 2). Han, in col 9, lines 15-30, discloses that the ions implanted have an atomic weight of greater

Art Unit: 1756

than about 35 a.m.u. (claim 8). Han, in col 8, lines 1-22, discloses that the masked magnetic layer is formed by photolithographically forming a liftoff stencil layer of a patterned photoresist layer formed by conventional methods (claim 10). Han, in col 10, lines 12-34, and in col 13, lines 41-45, discloses that the exposed photoresist mask is stripped after exposure to ion implantation, and that the ion-implanted magnetic layer is covered by a lead layer (protective) (claim 11). Han, in col 5, lines 30-45, discloses that an underlayer (non-magnetic conductor spacer layer) is formed on the substrate followed by the deposition of the magnetic layer (MR layer, reference 18 of figure 1) (claim 13).

The difference between the claims and Han is that Han does not disclose that the change in magnetic property created in the unmasked portions forms lower coercivity regions capable of functioning as servo marks that can be sensed by read/write heads. Han does not disclose that the coercivity of the exposed (implanted portion) region changes from about 500 Oe to about 15000 Oe (claims 3, and 5). Han does not disclose that the masked magnetic layer is exposed to argon ions to change the coercivity of the exposed region of the magnetic layer (claim 7).

Edmonson, in col 3, lines 1-6, in col 4, lines 3-39, in col 6, lines 50-56, in col 8, lines 35-43, and lines 63-68, discloses the implanted portions (doped portions of the magnetic layer) of the magnetic film for forming the magnetic recording medium displayed rapid decrease in coercivity levels. Edmonson, in figure 4, and in figure 13, illustrates the variation of coercivity levels caused by the variation of doping levels wherein the coercivity variations occur in the claimed range i.e., a variation of 500 to

about 2000 Oersteds. Edmonson, in col 5, lines 30-45, discloses the dopant gas is accompanied by argon gas.

The difference between the claims and Han in view of Edmonson is that Han in view of Edmonson does not disclose forming a data zone in or on the magnetic layer for storing data.

Sacks, in col 6, lines 6-556, discloses that the servo pattern of high coercivity regions and low coercivity regions formed in the magnetic layer of the magnetic recording medium represents the servo data, wherein the servo data is detectable by the read member of the head.

Therefore, it would be obvious to a skilled artisan to modify Han by employing the method of using argon gas with a dopant gas and magnetizing the implanted areas to form servo tracks (areas of low coercivity that is readable by the transducing head) as taught by Edmonson because Edmonson, in col 8, lines 62-66, and in col 9, lines 1-3, discloses that the argon/dopant gas ratio can be varied to control the magnetic properties (including coercivity) of the magnetic recording film produced and Han in col 11, lines 1-8, discloses that the ion implantation process performed on the magnetic layer results in a magnetic layer with varying portions of magnetic coercivities. It would be obvious to a skilled artisan to modify Han by using the patterned doped magnetic layer to form a magnetic recording medium as taught by Edmonson and Sacks because Sacks, in col 6, lines 20-36, discloses that the read head senses the changing magnetic fields in the magnetic layer (disc) to provide readback signals representative of information represented by the changing magnetic fields.

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,383,574 (Han et al) in view of U. S. Patent No. 5,232,566 (Edmonson et al) and U. S. Patent No. 6,510,015 (Sacks et al) as applied to claims 1-11, and 13-14 above, and further in view of U. S. Patent Application Publication No. 2001/0033453 (Belser et al).

Han in view of Edmonson and Sacks is discussed in paragraph no.2.

The difference between the claims and Han in view of Edmonson and Sacks is that Han in view of Edmonson and Sacks does not disclose that the photoresist-coated magnetic layer is patterned using a stamper to form the selectively masked magnetic layer.

Belser, in [0040], discloses that a stamper is imprinted onto the photoresist coated magnetic layer (recording layer) to form a patterned resist layer on the recording layer.

Therefore, it would be obvious to a skilled artisan to modify Han in view of Edmonson and Sacks by employing the method of using a stamper to form the masked magnetic layer (recording layer) as taught by Belser, because Belser, in [0039], discloses that the using the stamper enables the photoresist layer to reproduce the format pattern of the stamper accurately.

Response to Arguments

4. Applicant's arguments with respect to claims 1-14, have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 1756

A) Applicants argue that Han is related to a magnetic sensor element, for data storage, and that Han does not form a magnetic recording medium.

See paragraph no. 2. Also, Han teaches implanting ions onto the selectively masked magnetic layer, and Sacks teaches using the selectively ion-implanted magnetic layer as a magnetic recording medium that can be sensed (servo pattern) by a read/write head.

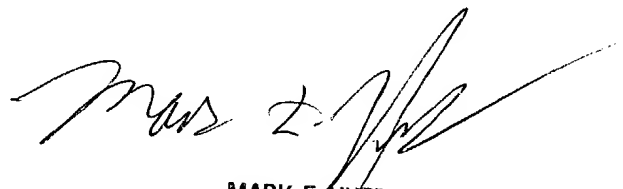
Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

md

April 7, 2004.



MARK F. HUFF
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